

REMARKS

In accordance with the foregoing, the claims have not been amended. Claim 19 is cancelled. Claims 1-18, and 20-32 are pending and under consideration.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-6, 8-9, 11, 15-18, 20-21, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by Mcllvain et al. (Mcllvain), U.S. Patent No. 5,765,200 in view of Barton et al. (Barton), U.S. Patent No. 6,233,389; claims 12-14, 23-26, and 28-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by Mcllvain in view of Barton and further in view of Aoki et al. (Aoki), U.S. Patent No. 6,009,231; claims 7 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by Mcllvain, and Barton in further view of Aoki; and claims 22 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by Mcllvain in view of Barton, and further in view of Peters et al. (Peters), U.S. Patent No. 5,884,284. These rejections are respectfully traversed.

By way of review, Mcllvain is directed towards controlling logical positioning within a storage device of a computer system so that the storage device can be accessed by one or more of a plurality of processors within the computer system. In order to achieve this, Mcllvain proposes a logical position indicator, maintained by the storage controller such that the storage controller controls the logical positioning within the storage device. In this way, in Mcllvain, the logical positioning mechanism shifts the logical positioning responsibility from the host processors to the storage controller.

Claim 32 at least recites:

a controller which records a video stream in physical free blocks of the recording medium or reads a recorded video stream recorded on the recording medium and assigns physical free blocks nearest to the recorded or reproduced physical free blocks as logical circular buffer blocks based on the control information

Therefore, claim 32 requires that physical free blocks nearest to the recorded or reproduced physical free blocks are assigned as logical circular buffer blocks.

Attention is respectfully drawn to the challenges the Applicant of the present Application sought to overcome with the features recited in the claims, including claim 32. Page 2 of the originally filed Specification states that "a time delay occurs in head movement" since "two separate areas for time-delayed viewing of one channel and recording/reproduction of another channel should be alternately accessed when time delayed viewing is implemented." To

overcome this problem, the Applicant claims “a controller which ... assigns physical free blocks nearest to the recorded or reproduced physical free blocks as logical circular buffer blocks.” In this way, as discussed on page 11 of the originally filed Specification, “the moving time of the head for track search ... can be reduced by assigning circular buffer blocks for time-delayed viewing in a track near to video stream blocks that are being recorded/reproduced when a time-delayed viewing mode is performed simultaneously with a recording/reproduction mode.”

Therefore, what the cited references discuss regarding how the circular buffer of the respective cited references is assigned weighs heavily in setting forth claim 32 as distinguishing over the cited art. Applicant respectfully submits that none of Mcllvain or Barton or any of the other cited art of record, discusses or suggests with specificity sufficient to support a prima facie case of obviousness, the claimed “a controller which ... assigns physical free blocks nearest to the recorded or reproduced physical free blocks as logical circular buffer blocks.”

In response to Applicant’s previous arguments that Mcllvain fails to discuss or suggest how each logical address of the circular buffer of Mcllvain is assigned, the Office Action on page 2, cites to col. 5, lines 53 through col. 6, lines 1-49 as discussing how the each address of the circular buffer of Mcllvain is assigned.

Col. 5, line 53 – col. 6, line 49 of Mcllvain first discuss that in the logical positioning mechanism of Mcllvain, rather than the conventional method of the host processor indicating the address of the logical or physical position on the storage device to be addressed, the processor in Mcllvain merely tells the storage controller to write the data, and the storage controller uses the logical positioning mechanism stored therein to determine the next logical position to receive the data. Mcllvain then proceeds to discuss the logical positioning mechanism.

Specifically, Mcllvain states that its logical positioning mechanism includes one or more logical position indicators (LPI) stored within the storage controller for indicating the next logical position within the storage device to be indicated. In contrast, claim 32 discusses only a subset of the free blocks on the recording medium as the circular buffer, that is, claim 32 recites “assigns physical free blocks nearest to the recorded or reproduced physical free blocks as logical circular buffer blocks.”

Further, specifically as claimed, the free blocks assigned to the logical circular buffer are “physical free blocks nearest to the recorded or reproduced physical free blocks.” In the cited portion of Mcllvain, col. 5, line 53 – col. 6, line 49, Mcllvain discusses logical positioning indicators which indicate the next logical read point or the next logical write point within the

storage device. However, Mcllvain is silent regarding how these logical write and read points relate to the initial assignment of physical free blocks in the storage device to the logical circular buffer.

Applicant respectfully submits that Mcllvain fails to discuss or suggest assigning only particular physical free blocks as a logical circular buffer because Mcllvain discusses that the logical positioning mechanism of Mcllvain is for an entire storage device, wherein the entire storage device is logically organized as a circular buffer. See claims 1 and 28-29 of Mcllvain. Therefore, Mcllvain fails to discuss or suggest specifically "assigns physical free blocks nearest to the recorded or reproduced physical free blocks as logical circular buffer blocks."

Also in the Response to Arguments section, the Office Action on page 3 appears to cite to Barton in col. 5, lines 34-67 as discussing the assignment of free blocks in the circular buffer.

Barton in col. 5, lines 34-67 discusses only in lines 56-58 the circular buffer of Barton, and here, Barton merely discusses that logical segments are generated from accumulated events in the event buffer, and that each logical segment points directly to the circular buffer, e.g. the video buffer. However, Barton is silent specifically regarding the claimed "assigns physical free blocks nearest to the recorded or reproduced physical free blocks as logical circular buffer blocks."

Absent further discussion in Barton, one of ordinary skill in the art would understand the circular/video buffer of Barton to be managed in a conventional manner, as discussed in the background section of the originally filed Specification of the present Application.

Accordingly, Applicant respectfully submits that Barton fails to discuss or suggest the features of claim 32 and cure the deficiencies of Mcllvain.

Therefore, in view of the above remarks, Applicant respectfully submits that neither Mcllvain nor Barton, whether considered alone or in combination, discuss or suggest the features of claim 32, and therefore, that claim 32 patentably distinguishes over the cited art.

Claim 1 at least recites:

using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer, based on the control information when a time-delayed viewing mode is selected; and

The Office Action states that Mcllvain fails to discuss the above features of claim 1, and relies upon Barton, in col. 5, lines 34-67 and FIGS. 5 and 6, as curing this deficiency.

As discussed above regarding claim 32, Barton in col. 5, lines 34-67 only briefly mentions the circular buffer/video buffer, wherein here, Barton fails to discuss or suggest specifically how physical free blocks are assigned to the circular buffer. Rather, as Barton discusses that logical segments correspond to parsed MPEG segments, and that logical segments point directly to the circular buffer, Barton appears to be discussing assigning written (i.e. not free) blocks to the circular buffer of Barton.

Further, FIG. 5 of Barton merely shows components of the Packetized Elementary Stream (PES) buffer 605 of Barton, which is not the same as the circular/video buffer 613 of Barton. FIG. 6 of Barton merely illustrates a written (i.e. not free) block being assigned to the circular buffer of Barton. However, Barton is silent regarding the claimed "assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer."

As set forth above, absent further discussion in Barton, one of ordinary skill in the art would understand the circular/video buffer of Barton to be managed in a conventional manner, as discussed in the background section of the originally filed Specification of the present Application.

Therefore, in view of the above remarks, Applicant respectfully submits that neither Mcllvain or Barton, whether considered alone or in combination, discuss or suggest the features of claim 1, and therefore, that claim 1 and claims 2-6 and 8, which depend therefrom, and recite patentably distinct features of their own, patentably distinguish over the cited art of record.

Regarding claim 4, the outstanding Office Action has maintained the rejection against claim 4, without addressing Applicant's previously submitted remarks regarding the features of claim 4 distinguishing over Mcllvain.

Applicant requests, in the interest of compact prosecution, that a response to Applicant's arguments be provided, or an indication that claim 4 is allowable, in a next Office Action. For convenience, Applicant has herein repeated the remarks originally filed on April 15, 2009.

Claim 4 at least recites "the control information comprises file attribute information, file assignment information, free block information for each track, and circular buffer block information." In the rejection against claim 4, the Office Action cites to col. 9, lines 5-47 of Mcllvain. However, here, Mcllvain is not discussing the assignment of physically discontinuous blocks to sequential logical blocks in a circular buffer.

Rather, here, Mcllvain discusses the format that a host processor uses to instruct the storage controller (and specifically, the logical positioning mechanism therein (see FIG. 1 of Mcllvain)), when the host processor wishes to perform an operation against the shared storage device. In col. 9, lines 40-67, Mcllvain discusses an example of such an operation, which would be, for example, writing records to a DASD data log set.

Accordingly, Applicant respectfully submits that the cited art fails to discuss or suggest the features of claim 4.

Claim 20 at least recites:

wherein the control information area comprises:
file attribute information;
file assignment information;
free block information which manage the free blocks for each track
of the recording medium; and
circular block information which manage the circular buffer blocks

Therefore, for at least the reasons set forth above regarding claim 4, Applicant submits that claim 20 also patentably distinguishes over the cited art.

Claim 9 at least recites:

using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer and recording video streams for time-delayed viewing in the assigned circular buffer blocks, based on the control information when a time-delayed viewing mode is selected; and
assigning free blocks of the disk recording area and recording video streams of a channel to be recorded in the assigned physically discontinuous free blocks when a recording mode is selected during the time-delayed viewing mode, assigning free blocks nearest to the recorded free blocks as the circular buffer blocks, and recording the video streams for time-delayed viewing in the assigned circular buffer blocks

Therefore, for at least the reasons set forth above regarding claims 1, and 32, Applicant submits that claim 9, and claim 11, which depends therefrom, and recites patentably distinct features of its own, patentably distinguish over the cited art.

Claim 15 at least recites "assigning free blocks nearest to the recorded free blocks as logical blocks in a circular buffer." Therefore, for at least the reasons set forth above regarding claim 32, Applicant submits that claim 15 patentably distinguishes over the cited art.

Claim 16 at least recites “using a processor to assign free blocks nearest to the reproduced free blocks as logical blocks in a circular buffer.” Therefore, for at least the reasons set forth above regarding claim 32, Applicant submits that claim 16 patentably distinguishes over the cited art.

Claim 17 at least recites “using a processor to assign free blocks nearest to the recorded or reproduced free blocks as logical blocks in a circular buffer.” Therefore, for at least the reasons set forth above regarding claim 32, Applicant submits that claim 17 patentably distinguishes over the cited art.

Claim 18 at least recites:

a video stream storing area which records video streams, comprising:

video stream blocks which are physically discontinuously arranged and assigned sequentially within a circular buffer, and which are used to record video streams for time-delayed viewing; and

free blocks which are logically assignable to the circular buffer, or which record other video streams during a mode other than a time-delayed viewing mode; and

a control information area which stores control information relating to the video stream storing area,

wherein the video stream blocks are arranged physically discontinuously based on the control information stored in the control information area.

Therefore, for at least the reasons set forth above regarding claims 1 and 32, Applicant submits that claim 18, and claim 20, which depends therefrom, and recites patentably distinct features of its own, patentably distinguishes over the cited art.

Claim 21 at least recites:

a controller which assigns physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer, based upon the control information in response to a time-delayed viewing mode being selected, and which records video streams for time-delayed viewing in the assigned circular buffer blocks

Therefore, for at least the reasons set forth above regarding claim 1, Applicant submits that claim 21 patentably distinguishes over the cited art.

Favorable reconsideration and withdrawal of the rejection against claims 1-6, 8-9, 11, 15-18, 20-21 and 32 are respectfully requested.

Regarding the rejection against claims 12-14, 23-26, and 28-31 under 35 U.S.C. § 103(a) in view of Mcllvain, Barton, and Aoki, Applicant respectfully traverses this rejection below.

Claim 12 at least recites:

using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer and recording video streams for time-delayed viewing in the assigned circular buffer blocks, based on the control information when a time-delayed viewing mode is selected;

assigning free blocks of the disk recording area, recording video streams of a channel to be recorded in the assigned physically discontinuous free blocks, assigning free blocks nearest to the recorded free blocks as the circular buffer blocks, and recording video streams for time-delayed viewing in the assigned circular buffer blocks, when a recording mode is selected together with the time-delayed viewing mode

Applicant submits that Aoki fails to cure the above described deficiencies of Mcllvain and Barton, as set forth above regarding claims 1 and 32. Therefore, Applicant submits that none of Mcllvain, Barton, or Aoki, whether considered alone or in combination, describe or suggest the features of claim 12, or claim 13 which depends therefrom and recites patentably distinct features of its own.

Claim 14 at least recites:

using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer and recording video streams for time-delayed viewing in the assigned circular buffer blocks, based on the control information when a time-delayed viewing mode is selected; and

reading blocks to be reproduced based on the control information, assigning free blocks nearest to the reproduced free blocks as the circular buffer blocks, and recording the video streams for time-delayed viewing in the assigned circular buffer blocks, when a reproduction mode is selected together with the time-delayed viewing mode.

Therefore, at least in view of the above remarks regarding claim 12, Applicant submits that claim 14 patentably distinguishes over the cited art.

Claim 25 at least recites "the controller ... sets a pointer of a write point to a last one of the assigned circular buffer blocks," and claims 30-31 at least recite "the controller sets a pointer of a write pointer to a last one of the assigned circular buffer blocks."

The Office Action appears to rely solely upon Aoki in FIGS. 12a-12c, and col. 11, lines 5-60, as discussing these features, and curing a deficiency of Mcllvain and Barton. However, in

the cited passage and FIGS., Aoki merely discusses use of a ring buffer for temporarily storing demodulated data read out of a digital video disk. However, Aoki is silent in the cited passage regarding setting a write pointer to a "last one of the assigned circular buffer blocks," where "assigned buffer blocks" features antecedent basis in claim 21 as being "physically discontinuous free blocks."

In contrast, the write pointer (WP) and read pointer (RP) of Aoki, shown in FIGS. 12a-c of Aoki appear to indicate blocks available to be written to (the "ARD") as being continuous. Further, col. 7, line 66 – col. 8, line 5 refer to the ring buffer in physical terms. Therefore, Aoki discusses the blocks in its ring buffer as being physically continuous.

Accordingly, Aoki fails to discuss or suggest the claimed "sets a pointer of a write pointer to a last one of the assigned circular buffer blocks," wherein the assigned circular buffer blocks, as claimed are "physically discontinuous free blocks."

Therefore, Applicants submit that none of Mcllvain, Barton or Aoki, whether considered alone, or in combination, discuss or suggest the features of claims 25 and 30-31. Therefore, Applicant respectfully submits that claims 25, and 30-31 patentably distinguish over the cited art.

Applicant respectfully submits that claims 23-24, and 26 and 28-29 patentably distinguish over Mcllvain, Barton, or Aoki, whether considered alone or in combination, at least for the reasons set forth above regarding claim 21 from which they depend, as well as for the patentably distinct features recited in these claims.

Favorable reconsideration and withdrawal of the rejection against claims 12-14, 23-26, and 28-31 are respectfully requested.

Regarding claims 7 and 10, rejected under 35 U.S.C. § 103(a) in view of Mcllvain, Barton, and Aoki, Applicant respectfully traverses this rejection.

Claim 7 at least recites "sequentially assigning free blocks comprises interleavedly assigning the free blocks for each video stream, if the video streams are of different channels to be recorded concurrently." The Office Action states that neither Mcllvain nor Barton discuss or suggest the claimed "if the video streams are of different channels to be recorded concurrently," and relies upon Aoki, citing to col. 1, lines 12-41, as curing this deficiency.

However, Aoki fails to discuss or suggest "video streams of different channels," wherein channels refer to broadcast channels, as claim 1 from which claim 7 depends recites a "broadcast receiving system." Rather, Aoki merely reproduces data read out of a digital video

disk, and is silent regarding receiving broadcast channels, or further "video streams of different channels."

Therefore, Applicant submit that Aoki fails to cure the deficiencies of Mcllvain and Burton, and thus, that claim 7, and claim 10 which depends therefrom and recites patentably distinct features of its own, patentably distinguishes over Mcllvain, Burton, and Aoki, whether considered alone, or in combination.

Favorable reconsideration and withdrawal of the rejection against claims 7 and 10 are respectfully requested.

Regarding claims 22 and 27, rejected under 35 U.S.C. § 103(a) in view of Mcllvain, Barton, and Peters, Applicant respectfully traverses this rejection.

Applicant respectfully submits that Peters fails to cure the above described deficiencies of Aoki and Barton as applied above regarding claim 21 from which claims 22 and 27 respectively depend. Therefore, for at least the reasons set forth above regarding claim 21, Applicant submits that claims 22 and 27 patentably distinguish over the cited art.

Favorable reconsideration and a withdrawal of the rejection against claims 22 and 27, are respectfully requested.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

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If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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